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12 BEFORE THE
NATIONAL ENERGY BOARD

26 RESPONSE TO NATIONAL
ENERGY BOARD INFORMATION
REQUEST NO. 3

36 NATIONAL ENERGY BOARD
ORDER NO. RH-3-81

FOOTHILLS PIPE LINES (YUKON) LTD.

MARCH 20, 1981

Suite 930
90 Bank Street
Ottawa, Ontario
K1P 6B9

1600, 205 - 5 Avenue S.W.
Calgary, Alberta
T2P 2V7

Pam: 621.644: (*40)

AHGP FPLY

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Rec'd: Mar 29/81

Order No.

File:

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NATIONAL ENERGY BOARD

OTTAWA, ONTARIO
K1A 0E5



OFFICE NATIONAL DE L'ÉNERGIE 01

OTTAWA, ONTARIO
K1A 0E5

File No.: D1562-F6-2

16 March 1981

Mr. H.N.E. Hobbs,
Supervisor, Government Approvals,
Foothills Pipe Lines (Yukon) Ltd.,
1600-205 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 2V7.

Dear Mr. Hobbs:

Re: Foothills Pipe Lines (Yukon) Ltd. -
Hearing to be Held Pursuant to Order
No. RH-3-81, Information Request No. 3

This letter refers to your letter of 26 February 1981, with which you enclosed working papers relating to the Final Design Cost Estimates for the Eastern and Western Legs, being "prebuilt" facilities in Zones 6, 7, 8 and 9.

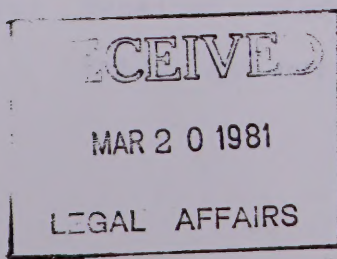
In accordance with section 5.1 of the National Energy Board Rules of Practice and Procedure, the Board requests that Foothills Pipe Lines (Yukon) Ltd. file additional information as specified in the attachment to this letter. The Board would appreciate such information being filed by 20 March 1981.

Since this letter and the replies thereto are considered by the Board to constitute part of the record in relation to this hearing, copies of this letter and replies thereto are to be served on those named in the Hearing Order or any amendments to it which may be issued, and are to be available for public examination.

Yours truly,

G. Yorke Slader,
Secretary.

attach.



Foothills Pipe Lines (Yukon) Ltd.

Hearing Order RH-3-81

References: Eastern Leg Final Design Cost Estimate
Phase I - (Ste.) Facilities - Zones 6 & 9

Working Papers Final Design Cost Estimate
Eastern Leg - Phase I - Zones 6 & 9

In order that a detailed analysis of the Compressor and Meter Station Installation Cost Estimates can be made, information on the key elements is required. The working papers as filed with the Board do not provide details but summaries only.

With reference to Zones 6 and 9, and specifically the installation cost for Compressor Stations 367, 392, 394 and the installation cost of Monchy Meter Station, Foothills is required to submit the following:

- (a) an explanation of the productivity and how it is applied;
- (b) an explanation of the methodology used to calculate man-hours;
- (c) detailed information on equipment used, equipment rates and how equipment costs are worked into the estimate;
- (d) detailed information on crew makeup, labour rates, and how unit price is derived;

RESPONSE TO BOARD INFORMATION REQUEST #3
HEARING ORDER RH-3-81

With reference to Zones 6 and 9, and specifically the installation cost for Compressor Stations 367, 392, 394 and the installation cost of Monchy Meter Station, Foothills is required to submit the following:

(a) BOARD REQUEST

An explanation of the productivity and how it is applied.

RESPONSE

The manhours required to complete the different work tasks associated with a Compressor Station were estimated using the Richardson System supplemented in certain areas with Means and J. S. Page.

The manhours developed using these estimating standards were then converted to compensate for local productivity, weather, equipment availability etc. by applying the productivity factors outlined in Schedule 1.

COMPRESSOR STATION ALBERTA AND SASKATCHEWANAPPLIED PRODUCTIVITY FACTORS

	<u>Civil Sewers</u>	<u>Struc. Steel</u>	<u>Equip.</u>	<u>Instr. Piping</u>	<u>Elect.</u>	<u>Insul Painting</u>
Estimating Standards (U.S. Gulf coast)	1.00	1.00	1.00	1.00	1.00	1.00
Productivity Factor used (Southern Alberta and Saskatchewan)	1.04	1.18	1.30	1.40	1.23	1.41

(b) BOARD REQUEST

An explanation of the methodology used to calculate manhours.

RESPONSE

The first step is to perform a complete quantity takeoff. Unit manhour rates are then generated as outlined in Response No. 1. By multiplying the quantity by the unit manhours and applying the appropriate productivity factor we can determine the total manhours required to construct a Compressor Station.

At the time the station estimates were done for the Eastern Leg complete drawings were not available. To generate manhour requirements for each system a detailed manhour requirement was generated for a typical station for which drawings were available. The typical station manhours were then adjusted to compensate for differences between the typical and the Eastern Leg stations.

(c) BOARD REQUEST

Detailed information on equipment used, equipment rates and how equipment costs are worked into the estimate.

RESPONSE

An equipment list used in generating the estimate for the typical station is attached as SCHEDULE 2.

The equipment costs are included in the unit price for labor. (The total cost of \$465,915 is divided by 136 000 manhours in the typical station to come up with \$3.43 per manhour. This 3.43 is included in the \$45.80 unit price for labor.)

QTY.	DESCRIPTION	No. of Mo's	RATE	TOTAL
	1845 - DISC - 45 HP CASE	7	900.	6,300.
	^{3/4} yd. BACKHOE - LOADER 780 (CASE)	6	2,785.	16,710.
	20 Ton - PICKERS - DROT	11	2,500.	27,500.
	12 yd. DUMP TRUCK	4	2,200.	8,800.
	^{3/4} T. PICKUPS -	16	385 + 11c (385.)	6,160.
	STN. WAGON	8	300 + 17c (400.)	3,200.
	AMBULANCE	8	300 + 17c (400.)	3,200.
	50 T. HYD. MOBILE - 200 HRS	-	82. HR.	16,400.
	DIESEL DRIVEN - POWER UNIT	8	30 KW - 1500. 50 KW - 1100. *	12,000. 8,800.
	1000 GAL. WATER STORAGE	8	100	800.
	500 GAL FUEL STORAGE	24	50	1,200.
	10' x 50' CRAFT SHACKS -	22	375.	8,250.
	12' x 60' OFFICE	9	550.	4,950.
	40' x 80' - WAREHOUSE - (PR. FAB. SH)	9	1600.	14,400.
	SET UP CHARGE			10,000.
	FIRST AID TRAILER ^{1/2} GAUGE USE	8	325.	2,600.
	10 x 24 - FIELD BNG.	10	275.	2,750.
	TOILET ^{1/2} W. SLEEPING	8	1200.	9,600.
	FREIGHT ON TRAILER UNITS (RETURN)	10 1/2	1500.	21,000.
	AIR COMPRESSORS - 150 CFM	12.	680.	8,160.
	80# BREAKER	6	185.	1,110.
	MOIL POINTS	6	12.	72.
	FROST CHISELS	6	15.	90.
	TAMPERS	12	20.	240.
	1" AIR HOSE	6	100.	600.
	DOUBLE DRUM - COMPACTOR	7	800.	5,400.
	CHAIN SAW	7	240.	1,680.
	9" SKILL SAW	20	90.	1,800.
	DEEMULT - SHP. 14"	8	300.	2,400.
	^{1/8} " BUSHINGS	4	.25 ea	400.
	SNAP TIE WEDGES	4	.07 ea	326.
	1 yd. CONC. BUCKET	3	240.	720.
	CLEANING TRUCK	3	225.	675.
	1-1500 VIBRATING JACK	15.	400.	5,400.
	1-1500 VIBRATING JACK	1	1100.	8,350.

	DESCRIPTION	No. & No's	RATE	TOTAL
	CONCRETE MIXER 1/2yd.	4	360.	1,440.
	POWER TROWEL 36"	2	250.	500.
	CONC. VIBRATORS	12	210.	2,520.
	EXTRA CORE - 10'	6	40.	240.
	WHEEL BARROWS.	28	45.	1,260.
	3" GAS DRIVEN PUMP.	8	500.	2,400.
	3" SUCTION HOSE	8	36.	288.
	3" DISCHARGE ✓	8	120.	960.
	3/8" DRILLS - VARIABLE.	12	45.	540.
	1/2" ✓	6	45.	270.
	RT. ANGLE GRINDER	60	65.	3,900.
	STRAIGHT GRINDER	6	65.	390.
	HI-SPEED PENCIL ✓	10	65.	650.
	BENCH GRINDER	8	120.	960.
	3/4" DR. ELECTRIC IMPACTS	10	180.	1,800.
	SOCKETS	7	144.	1,008.
	200 AMP GAS DRIVEN ^{WELDERS}	60	210.	12,600.
	TRAILERS FOR WELDERS	30	45.	1,350.
	50' CABLED	60	24.	1,440.
	OXYGEN & ACET. OUTFITS	48	129.	6,192.
	ELECTRODE OVENS	12	40.	480.
	CHAIN HOISTS - 1 1/2 T.	24	90.	2,160.
	✓ ✓ - 2 T.	12	96.	1,152.
	COME. A-LONGS - 1 T.	36	50.	1,800.
	20 T. HYDRAULIC JACKS	8	72.	576.
	100 T. ✓	4	320.	1,280.
	30 T. PORTA-POWER	3	210.	630.
	LADDERS - 12'-24' EXT.	18	36.	648.
	✓ 26'-36' ✓	18	60.	1,080.
	✓ 10' STEP	18	45.	810.
	535 - PIPE THREADERS	8	270.	2,160.
6"	LINE-UP CLAMP	18	28.	504.
8"	✓	2	28	56.
10"	✓	2	40	80.
12"	✓	2	45	90.
14"	✓	2	58	116.
16"	✓	2	200	400.

QTY.	DESCRIPTION	No of Mo's	RATE	TOTAL
	PIPE VICES - TRIPOD.	40	17.	680.
	BOLT CUTTERS.	7	21.	147.
	TARPS 20 x 20 Poly	42	23.	966.
	TORQUE WRENCH - 100-400	4	80.	320.
	✓ ✓ 500-1000	1	120.	120.
	2"-4" BEVELLING MACHINES	24	120.	2,880.
	6"-8" ✓ ✓			
	10"-12" ✓ ✓			
	14"-20" + 42"-48" ✓ ✓			
	SET PIPE DIED	6	250.	1,500.
	SET BOLT DIED			
	SET HAMMER WR. (3/4"-2 1/2")			
	SECTIONS - SAFEWAY SCAFFOLD	5	5.70	29.
	SETS - CASTERS - 8"	5	20.	100.
	SCAFFOLD PLANKS - 2'x10'x8'	5	2.50	13.
	HILTI GUN	3	150.	450.
	AIR TUGGER	4	420.	1680.
	MISC -	4	1,000.	4,000.
	KANGO HAMMER - 950X	3	240.	720.
	ARC AIR GRINDERS.	4	75.	300.
	TIG OUTFITS.	4	75.	300.
	TIGRE TORCHES	8	25.	200.
	PROPANE BOTTLED. 100 LB.	12	15.	180.
	60-T MOBILE CRANE	5	5880	29,400
	70-T HYDRAULIC	1	11,180	11,180
	SCAFFOLD			
75	SETS 'EZ'	6	60	27,000
	+ 10% CONTINGENCIES			358.95
				394,843.
	NOTE \$ are in 1978, added 1.8% for equip. inflation			x 1.18
				465,915

(d) BOARD REQUEST

Detailed information on crew makeup, labour rates, and how unit price is derived.

RESPONSE

Using the estimating procedure explained in the preceding responses no information on crew makeup was developed.

Details on the development of a composite labor rate and a unit price for labor are attached as SCHEDULES 3 and 4.

ALBERTACRAFT RATESEFFECTIVE MAY 1, 1980

Boilermakers	16.99
Carpenters	15.63
Cement Masons	14.27
Electricians	16.71
Insulators	15.93
Ironworkers	16.54
Labourers	12.97
Millwrights	16.82
Operating Engineers	16.12
Painters	13.99
Plumbers	16.74
Teamsters	<u>14.86</u>
	187.37

Average \$ 15.63

Weighted Avg. 15.21

CONSTRUCTION COST ESTIMATE SUMMARYUNIT PRICEJANUARY, 1981

ate

1. Total Craft Hours (include all subcontracts)		<u>136,000</u>
2. Proposed Work Week <u>60 Work/Wk.</u>		
(Enter all numbers as dollars against line 1 above)		
3. Average Straight Time Labour Rate (Weighted)		15.21
4. Average Union Fringe (Weighted)		2.45
5. Foreman Differential		.30
6. Overtime		4.95
7. Sub-Total - All-in Rate	SUB-	22.91
8. Payroll Burden (Company) - 5.5% x line 7		1.26
9. Travel Time - once in and once out for peak labour x 2 plus rotation expense		1.06
10. Sub-Total	SUB-	25.23*
11. Daily Travel Expense and Subsistence		7.32
12. Consumables <u>8½ %</u>		1.46
13. Small Tools <u>4 %</u>		.64
14. Construction Equipment Rentals) Rigging)		3.43
15. Temp. Field Facilities		2.80
16. Field Office Expense <u>2½ %</u>		.54
17. Field Administration and Direct Supervision (FADS)		2.97
18. Subcontractor Costs (OH & P)		<u>1.37</u>
	SUBTOTAL	<u>20.44</u>
19. Total Construction Costs/line 1 manhour	=	<u>45.76*</u>

(All-in Number)

Say \$45.80/Hour

* N.B. - Gross Field Labour = line 3 through 9 = line 10.

Field Related Items = line 11 through 17 = line 18.

Excludes - H.O. Engineering and Project Management - Fee;
Permanent Materials and Equipment.

Date Due

49405

Pam:621.644: (*40)

AHGP

FPLY

Foothills Pipe Lines (Yukon) Ltd.

AUTHOR
Before the National Energy Board

TITLE response to National Energy
Board information request no. 3

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